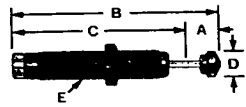
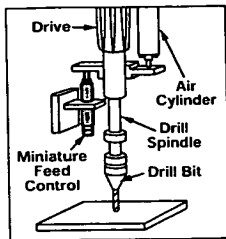


**EXHIBIT B**

# Feed Controls & Air-Powered Springs

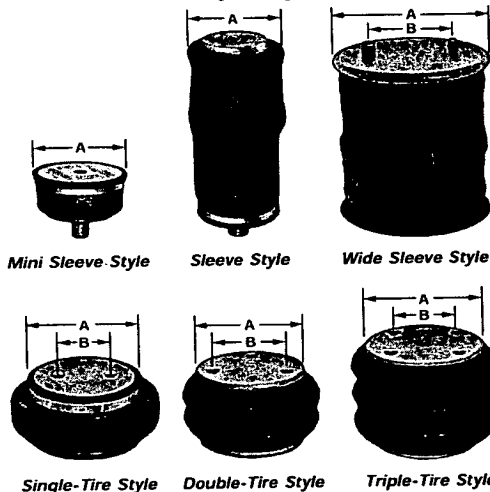
## Miniature Feed Controls



Also known as velocity controls, these devices provide steady resistance and precise speed control (in one direction). They're often used with an air cylinder to control the advance of saw blades, cutters, and drill bits (see illustration at left). As the piston rod is compressed, hydraulic fluid is forced through an adjustable internal opening, creating consistent velocity control throughout the stroke. Turn the knob to adjust speed and force. All have a threaded body and hex jam nut for mounting. An internal spring returns the piston rod to its extended position. Cylinder and bumper are steel with a black-oxide finish. Piston rod is Type 440C stainless steel. Temperature range is 32° to 150° F.

Max. Force, lbs.	Stroke Lg. (A)	Min.	Speed @ Force		Extend. Lg. (B)	Comp. Lg. (C)	Bumper Thread Dia. (D)	Size (E)	Each
			Max.	Min.					
400	0.75"	1.6"/min.	@ 30 lbs.	325"/min.	@ 380 lbs.	4.67"	3.92"	0.66"	3/4"-16...3743K11..\$64.32
800	1.00"	0.5"/min.	@ 40 lbs.	400"/min.	@ 800 lbs.	5.62"	4.62"	0.9"	1"-12...3743K12..99.50
800	1.58"	0.5"/min.	@ 40 lbs.	400"/min.	@ 800 lbs.	7.44"	5.86"	0.9"	1"-12...3743K13..140.82

## Air-Powered Springs



Inflate these high-strength, flexible rubber springs with compressed air and use them for either controlling vibration or lifting/moving an object. They're made of either rubber sleeves or "tires" with corrosion-resistant metal retainers at each end (wide-sleeve styles have a mounting flange on the bottom). Springs can also be filled with water or antifreeze solution. Maximum pressure is 100 psi. Air-powered springs are made of neoprene rubber and have a temperature range of -20° to +135° F, unless noted.

For vibration control, the air pressure in the springs serves as an energy-absorbing medium to provide maximum vibration and shock isolation, load leveling, and height control. The springs isolate more than 95% of vibration caused by a force frequency of 400 cycles/minute, and more than 99% above 800 cycles/minute. Loads and height can be varied by adding or exhausting air. Springs require an **inflation valve** (sold separately below) when used for vibration control.

For lifting/moving applications, the air pressure in the springs exerts the force needed to produce a stroke for lifting, pushing, gripping, compacting, and tensioning. **Sleeve styles** offer superior vibration isolation. Installation may require additional lateral support. Springs need at least 10 psi of pressure to support loads (wide sleeve style needs at least 5 psi).

**Tire styles** provide lower compressed height and do not require a minimum pressure. They need external stops to prevent overcompression.

**To pick the right air-powered spring for vibration control applications:** Look at the max. force of the spring when fully extended and fully compressed; the spring needs to carry the whole weight of your load. Max. OD is also important—the entire spring needs clearance around it.

**To pick the right air-powered spring for lifting/moving applications:** The spring's force when fully extended needs to be at least as much as the weight of your load. The usable stroke is the travel the spring provides.

**Additional Information:** For additional information about these products, including mounting dimensions, performance data, and schematics, go to our web site, [www.mcmaster.com](http://www.mcmaster.com), and search for **9538KAC**, or fax us at 630-782-2800 and request **9538KAC**.

Usable Stroke	Fully Extended		Fully Compressed		Max. OD @ 100 psi	Dia. (A)	Mounting Holes		Pipe Size, NPTF (Dryseal)	Air-Powered Springs		Inflation Valves	
	Max. Force, lbs. @100 psi	Extend. Ht.	Max. Force, lbs. @100 psi	Comp. Ht.			Ctr.-to-Ctr. (B)	Thread Size x Dp.		Each	Each		
<b>Mini Sleeve Style</b>													
2.1"	120	3.6"	600	1.5"	3.6"	3.4"		5/16"-18 x 7/16"	1/8"	9538K21	\$71.64	9538K41	\$11.42
<b>Sleeve Style</b>													
4"	560	6.25"	1,250	2.2"	5.6"	5.1"		3/8"-16 x 1/2"	1/8"	9538K22	97.52	9538K41	11.42
4.4"	110	8"	360	3.6"	3.3"	2.8"		3/4"-16 x 5/8"	1/8"	9538K23	89.08	9538K41	11.42
4.9"	310	7.1"	1,100	2.2"	4.6"	4.1"		3/8"-16 x 1/2"	1/8"	9538K24	91.64	9538K41	11.42
5.5"	800	9.5"	950	4"	5.6"	4.1"		3/4"-16 x 5/8"	1/8"	9538K28	92.88	9538K41	11.42
6.5"	540	10.5"	850	4"	4.6"	4.1"		3/4"-16 x 5/8"	1/8"	9538K25	96.40	9538K41	11.42
6.5"	750	10.5"	1,100	4"	5.6"	5.1"		3/4"-16 x 5/8"	1/8"	9538K26	98.66	9538K41	11.42
6.8"	1,200	10.9"	2,000	4.1"	6.8"	6.3"		M20-2.5 x 10 mm	1/8"	9538K27	150.57	9538K41	11.42
<b>Wide Sleeve Style</b>													
9.1"	2,400	13.5"	8,600	4.4"	12.7"	9"	5.5"	1/2"-13	1/4"	4324T14	297.52	9538K42	11.25
11"	2,300	17.1"	7,900	6.1"	11.7"	9"	6.2"	1/2"-13	1/4"	4324T15	311.04	9538K42	11.25
12"	2,100	20.1"	7,300	8.1"	11"	9"	4.76"	1/2"-20	1/4"	4324T13	326.56	9538K42	11.25
13"	Not Rated	18.6"	5,000	5.6"	8.7"	7.7"	3.38"	1/2"-20	1/4"	4324T11	229.15	9538K42	11.25
14.1"	2,100	20.1"	7,300	6"	11"	9"	4.76"	1/2"-20	1/4"	4324T12	298.10	9538K42	11.25
<b>Single-Tire Style</b>													
2"	560	3.8"	1,500	1.8"	5.7"	3.4"	1.75"	3/8"-16 x 5/8"	1/4"	9539K41	108.10	9538K42	11.25
2"	1,500	5.9"	5,600	3.2"	11"	6.4"	3.5"	3/8"-16 x 5/8"	1/4"	9539K42	271.89	9538K42	11.25
2.8"	850	4.8"	2,000	2"	6.5"	4.2"	1.75"	3/8"-16 x 5/8"	1/4"	9539K44	125.66	9538K42	11.25
2.9"	1,500	5.9"	5,600	2.3"	11"	6.4"	3.5"	3/8"-16 x 5/8"	1/4"	9539K55	227.33	9538K42	11.25
3"	520	4.8"	1,600	1.8"	6"	3.4"	1.75"	3/8"-16 x 5/8"	1/4"	9539K43	119.00	9538K42	11.25
3"	3,600	7.2"	9,143	2.6"	13.2"	9"	6.2"	3/8"-16 x 5/8"	1/4"	9539K48	289.86	9538K42	11.25
3.2"	850	5.2"	2,600	2"	7.7"	4.2"	1.75"	3/8"-16 x 5/8"	1/4"	9539K46	127.06	9538K42	11.25
3.3"	1,100	5.3"	3,800	2"	8.7"	5"	2.75"	3/8"-16 x 5/8"	1/4"	9539K47	121.46	9538K42	11.25
3.4"	750	7.1"	3,000	2"	7"	4.2"	1.75"	3/8"-16 x 5/8"	1/4"	9539K49	147.20	9538K42	11.25
<b>Double-Tire Style</b>													
4.5"	580	7.7"	2,800	2.8"	6.5"	4.2"	1.75"	3/8"-16 x 5/8"	1/4"	9551K51	159.11	9538K42	11.25
6.1"	2,700	11.1"	9,400	3.4"	13"	9"	6.2"	3/8"-16 x 5/8"	1/4"	9551K53	285.50	9538K42	11.25
6.3"	1,100	10.8"	5,700	3.2"	10.3"	6.4"	3.5"	3/8"-16 x 5/8"	1/4"	9551K52	248.37	9538K42	11.25
6.9"	1,000	10.1"	5,000	2.9"	8.8"	5"	2.75"	3/8"-16 x 5/8"	1/4"	9551K54	189.81	9538K42	11.25
7.2"	1,500	12.2"	6,000	3.5"	10.3"	6.4"	3.5"	1/2"-13	1/4"	9551K55	262.50	9538K42	11.25
8.4"	2,600	14.4"	10,000	4.3"	13.7"	9"	6.2"	3/4"-16 x 5/8"	1/4"	9551K56	301.68	9538K42	11.25
<b>Triple-Tire Style</b>													
10.2"	4,700	18"	15,200	5"	15.5"	11.3"	6.25"	3/8"-16 x 5/8"	1/4"	9551K57	506.83	9538K42	11.25

★ Springs have threaded mounting studs rather than holes.

■ Made of natural rubber. Temperature range is -56° to +135° F. ★ Springs have threaded mounting studs rather than holes.  
■ Ctr.-to-ctr. dimension shown is from center of stud to center of air inlet.